tional Association, where we have voluntary effort put forward to satisfy spontaneous desire to learn. As this movement extends we may hope more and more to get a generation of parents who, having themselves experienced intellectual curiosity and the joy of satisfying it, who, having themselves felt the gain of a wider outlook on men and things, may by their example inspire their children with a similar disinterested desire for learning and culture.

NOTES.

The members of the Siberian Expedition sent out from this country sixteen months ago, at the joint expense of the Oxford University School of Anthropology and the Philadelphia University Museum, reached London last week. The leader, Miss M. A. Czaplicka, possessed exceptional qualifications for the work entrusted to her, being a native of Russian Poland, and a distinguished student of the Warsaw University and of Somerville College, Oxford. The expedition consisted of Miss Curtis, the artist, Miss Haviland, ornithologist, and Mr. Hull, of Philadelphia University, ethnologist. They proceeded from Warsaw to Krasniack, in Siberia, and thence to the mouth of the Yenisei. The first tribe examined was that of the Samoyeds, and then the winter was spent among the Tungus of the Tundra, a very primitive race, little influenced by Russian culture. The spring was devoted to the Tartars, who are much more civilised than either the Samoyeds or the Tungus. Much information of scientific interest has been acquired, and a large collection of costumes, weapons, implements, and ornaments made of copper and iron has been made. These will, it is hoped, be exhibited in Europe and America after the close of the war.

The Admiralty Air Department has been reorganised and for the future will be under the direction of a flag officer, with the title of Director of Air Services. Rear-Admiral C. L. Vaughan-Lee has been selected for this appointment. He held the post of assistant to the Director of Naval Ordnance from February, 1899, to July, 1900, and of Assistant Director of Naval Intelligence from January to December, 1905. The Director of the Air Department, Commodore M. F. Sueter, C.B., has been promoted to the rank of Commodore 1st Class, and will be in charge of the *matériel* side of naval aeronautical work, with the new title of Superintendent of Aircraft Construction. Commodore Sueter was appointed Inspecting Captain of Airships in September, 1910, and in 1912 he was selected for the post of Director of the Air Department.

An exhibition of the various forms of apparatus found most useful in the treatment of fractures met with in the war will be held in the premises of the Royal Society of Medicine, 1 Wimpole Street, W., from October 7 to 11. During the exhibition Sir Almroth Wright will demonstrate his recent researches in the drainage of wounds.

We learn from the *Kew Bulletin* that Mr. W. G. Craib, assistant for India in the Kew Herbarium, has been appointed assistant to the professor of botany in the University of Edinburgh, with the status of University lecturer on forest botany and Indian forest trees, Royal Botanic Garden, Edinburgh. Mr. J. Hutchinson succeeds Mr. Craib at the Royal Gardens, Kew.

The death is reported, in his eighty-second year, of Dr. Carlos J. Finlay, who was associated with the discovery of the part played by the mosquito in the transmission of yellow fever and other diseases. He was a native of Cuba, and received his general education at the Lycée at Rouen, and his professional education at the Jefferson Medical College, Philadelphia. He then returned to Cuba and became one of the leading physicians in the island.

The death is announced in *Engineering* for September 10 of Mr. G. W. Manuel, who for twenty-one years was superintending engineer to the Peninsular and Oriental Steam Navigation Company. Perhaps his strongest characteristic was his determination that the P. and O. mail liner should reach its port according to scheduled time without the variation of a minute, and no development was made unless he himself was perfectly satisfied that it could be relied on and would conduce to punctuality. Mr. Manuel became a member of the Institution of Naval Architects in 1879, and contributed frequently to debates. His death will be regretted by many sea-going engineers who have come under his influence.

We regret to see the announcement of the death, on September 14, at eighty-five years of age, of Sir John Knox Laughton, distinguished particularly by his studies in naval history. Sir John Laughton entered the Navy in 1853 as a naval instructor, and was mathematical and naval instructor at the Royal Naval College, Portsmouth, from 1866 to 1873. He was then transferred in the same capacity to the Royal Naval College at Greenwich, becoming also lecturer on meteorology. In 1885 he retired from active service on being appointed professor of modern history at King's College, London, and from that date until his death he devoted himself almost entirely to studies of naval history. In addition to valuable works upon this subject, he was the author of volumes on "Physical Geography in its Relation to the Prevailing Winds and Currents," and "A Treatise on Nautical Surveying." From 1882 to 1884 he was president of the Royal Meteorological Society.

Julius Payer, the discoverer of Franz-Josef Land, whose death on August 31 was announced in our last number, was born in Bohemia in 1841. He served with distinction in the war with Italy in 1866, before he joined the second German expedition to east Greenland in the *Germania*, under Koldewey, in 1869. There he acquired much experience in polar work, in the exploration of King William's Land and the extraordinary Franz-Josef Fjord. In 1871, through the liberality of Graf Wilczek, Payer and Weyprecht undertook an expedition in the *Isbjörn* to Spitsbergen and the Barents Sea as a preliminary to an Arctic expedition on a large scale. This expedition, the first to explore the north of the Barents Sea, was fruitful of discoveries there and in Spitsbergen and Hope

Island. The Austro-Hungarian Arctic Expedition sailed in 1872 in the *Tegetthof*. Weyprecht was again associated with Payer in the command. Their aim was to push north-east of Novaya Zemlya and return to Europe *viâ* the Behring Strait. From the first they met with misfortune. The *Tegetthof* was beset in the ice in 76° 22′ N., 63° E., and drifted with the pack throughout the winter in hourly danger of destruction. Twelve months later high land was sighted to the north-west and named Franz-Josef Land. A landing was made on one of the islands. A second winter was passed on the ice-bound ship, and in the summer of 1874 Payer conducted several sledge expeditions to explore the new land. Passing up Austria channel, he reached Cape Fligely in Rudolf Land in 81° 51′ N. North-eastward he saw further land, which he named King Oscar and Petermann Lands. In May the *Tegetthof* was abandoned, and after terrible hardships to get clear of the ice the expedition reached Novaya Zemlya in open boats in August, 1874. An English version of Payer's narrative, "New Lands within the Arctic Circle," appeared in 1876. In 1875 Payer was awarded the patrons' medal of the Royal Geographical Society.

In the course of excavations on the site of the great city of Pataliputra, the modern Patna in Behar, a discovery of much interest has been made. A vast pillared hall of the Maurya period, the third century B.C., has been unearthed. It contained eight rows of monolithic columns, fifteen feet apart, supporting a wooden superstructure which has been destroyed by fire. Some remarkable constructions of *sál* wood beams have also been found, the object of which is uncertain; they may have been platforms for mooring boats, or supports for another portion of the building. The type of architecture at once recalls the great hall at Persepolis, and we have thus a further indication of the influence of Persian art on India during this period.

The great Buddhist Emperor, Asoka, was in the habit of inscribing his edicts on monolithic pillars or on rocks throughout his wide dominions. The Buddhist pilgrim, Hiuen Tsang, mentions specifically sixteen such pillars. Up to the present ten have been discovered, but only two of these can be identified with those mentioned by the traveller. The rock inscriptions, of which twelve have already been found, though not possessing the artistic interest of the pillars, are in some respects the most valuable monuments of his reign. The recent discovery of another rock inscription by some gold prospectors at a place not far from Raichur, in the Dominions of the Nizam of Hyderabad, is now announced. The Government epigraphist, Rao Sahib H. Krishna Sastri, is satisfied that it is a rock inscription. As the texts of these documents vary, the publication of the inscription will be awaited with interest.

Some admirable photographs of the adult and nestling of the Asiatic golden plover, and a most excellent account of the breeding habits of this bird, by Miss Maud Haviland, appear in the September issue of *British Birds*. The most important of her observations are such as concern the behaviour of apparently non-breeding birds of this species. On two points, however, she might well have been a little more explicit. The reader is left in doubt, for example, as to whether the newly-hatched nestlings accompany their parents, from the high to lower grounds, to participate in the formation of the flocks of which she speaks, and it would have been helpful to have had a more precise description of the plumage of the fledgling. Following Miss Haviland's paper comes a brief account, by Mr. C. W. Colthrup, of the idiosyncrasies of the nidification instinct in the redshank. Within the confines of the same marsh in Hampshire he found eggs in comparatively elaborate nests and screened from view by overarching stems of grass, while in other cases the eggs were laid in an apology for a nest, and without any attempt at concealment.

In the *Philippine Journal of Science*, vol. x., No. 1, Mr. R. P. Cowles contributes some extremely interesting notes on the habits of some tropical Crustacea. He deals more especially with the remarkable feeding habits of *Atya molluccensis*, and of several species of Caridina, and the peculiar structural modification of the chelæ associated therewith. In both genera the chelæ or "nippers" are armed with hairs, which, in Atya, can be opened to form funnel-shaped strainers for the capture of minute organisms, and closed to form a pencil-like brush, imprisoning the food thus captured, which is then conveyed to the mouth. While feeding, Atya, which is an inhabitant of running streams, remains perfectly still, with its strainers directed upstream. Caridina, with similarly armed chelæ, crawls about on the bottom of the stream, and uses the hairs, not as strainers, but as brushes, to sweep the bottom of the stream for minute particles of animal and vegetable matter. Mr. Cowles supplements these notes with valuable observations on the habits of *Myctris longicarpus*, which appears in countless numbers on sand-banks exposed at low tide. When the tide rises they immediately disappear beneath the sand. During their migrations they are continually smearing the sand over the mouth with the chelæ, apparently for the sake of the nourishment to be derived from the particles of animal matter it contains. These creatures are extremely difficult to approach, for on the slightest alarm they at once proceed to dig themselves into the sand, vanishing in about three seconds.

The recently issued part of Contributions from the United States National Herbarium, vol. xvii., part 6, is entirely occupied by an enumeration of the tropical North American species of Panicum by A. S. Hitchcock and Agnes Chase. One hundred and sixteen species and three subspecies are included, nine of which are new. The total number of species of Panicum in North America is now 216. Each species is accompanied by an outline map graphically representing its geographical distribution within the tropics of North America. There is also a key to the species and groups, and a complete list of the localities for each species is given.

A catalogue of the soft-water algæ collected in the Caucasus in the region of Czernomorsk is published by M. A. I. Lobik in the Bulletin of the Imperial Botanic Garden of Peter the Great, vol. xv., No. 1, 1915. Sixty-five species are enumerated; they include one Floridean alga, *Batrachospermum moniliforme*, one brown alga, *Hydrurus foetidus*, twenty-five Chlorophyceæ, twenty-four diatoms, and fourteen members of the Cyanophyceæ. Among the Chlorophyceæ a new form of Spirogyra and of Cosmarium are described, and also a new genus, Leptobasis, among the Cyanophyceæ. This new alga, *L. caucasica*, forms the subject of a separate memoir by M. A. A. Elenkin, who, with M. V. P. Savicz, made the whole collection. Elenkin, in determining the new genus, revises the old genus Michrochæte, and considers that the genera Michrochæte, Coleospermum, and Leptobasis should be classed in different sections of the Hormogoneæ. The paper is illustrated with text figures.

IN the *Philippine Journal of Science* for May (vol. x., No. 3), Mr. E. D. Merrills contributes four papers dealing with Philippine botany, and describes a number of new species of the genera Schefflera and Eugenia. In the opening paper on the present status of botanical exploration in the Philippines, which is illustrated by a map of the group, Mr. Merrill gives interesting particulars showing the amount of work which has been accomplished during the past thirteen years, and the parts of the archipelago which have been thoroughly explored. Compared with Java, Singapore, and Penang, the flora is not well known, and though much work has been done it has been confined to a few definite areas in Luzon and Mindanao. The islands are so densely forested that even in those regions visited by botanists on short excursions only a tithe of the plants has probably been collected, and a large number of endemic forms doubtless await discovery. Some fifteen years ago 2500 species of flowering plants were recorded from the islands; now the number is estimated at rather more than 7000, and it seems probable that 10,000 species is not an extravagant estimate for the phanerogamic flora of the Philippines. Some 40 per cent. of the whole Malay Archipelago flora will probably be found to be endemic in the islands.

TARE-LIKE rogues appear from time to time among culinary peas, and are characterised by the possession of stipules and leaves narrower and more pointed than those of normal plants. The pods also are distinct, since they are always curved and narrow, even though the races in which the rogues have arisen bear straight pods, and the seeds are less sweet than those of the types. The seed-raiser has attempted to eliminate the rogues by destroying them as they appear, but all to no purpose; the rogue still reappears, and with the object of understanding its origin and finding a means of control, Mr. Bateson and Miss Pellew have conducted a series of investigations at Merton, and have published their results in the *Journal of Genetics* (vol. v., No. 1) for July. Though the research has been extended and a large series of plants examined, the origin of the rogue is still a mystery, nor has a method been devised as yet for the elimination of these tare-like plants. Rogues may depart widely or only slightly from the type; in the latter case rogue characters may only appear in the youngest parts, but as such plants can produce complete rogues among their offspring they should be weeded out. Rogues in breeding beget only rogues, and even in a strain of quite normal plants rogues occasionally appear. One remarkable result of the inquiry is that normal plants crossed with rogues always give rogues, and this was found to be true in fifty out of fifty-two crosses, and to persist through three generations.

THE methods of bacterial analysis of air have recently been investigated by Mr. G. L. Ruehle in the course of an inquiry into the contamination of the air of cowsheds and its effects on the milk supply. In vol. iv., No. 2, of the *Journal of Agricultural Research*, a large number of comparative analyses is described in detail. Three forms of apparatus were used: (1) the standard sand-filter aeroscope of the American Public Health Association; (2) a modification of the standard designed by the author to permit sterilisation by dry heat; and (3) the Rettger liquid-filter aeroscope. The efficiency of the aeroscopes was tested by running two of each type in tandem so that the air passes through one filter and then through the other. The percentage of the total number of bacteria caught by the first filter determines the efficiency. The standard aeroscope was found to have a very variable efficiency, averaging 90 per cent., but the modified standard retained nearly 100 per cent. of the bacteria. The Rettger apparatus also gave excellent results, but required greater care in manipulation, as difficulties occur with foaming of the liquid during filtration and the tenacity with which the bacteria cling to the inner surface of the moist inlet tube. The method of determining bacterial precipitation from air by exposing Petri dishes is quite untrustworthy, as it only measures the number of bacteria-laden dust particles falling on the plate. The exposure of sterile water in pails gives an average bacterial count ten times higher than that obtained by the plate method.

WE have received vol. xxvi. of the *Anales* of the National Museum of Natural History of Buenos Aires, containing a useful index to the first twenty volumes of this publication (1864–1911), and an interesting illustrated account of the fine new building for the museum which it is hoped will soon be provided by the Argentine Government. Under the energetic direction of Dr. Angel Gallardo, the technical scientific work of the museum has become very varied, and the newly-published volume contains several valuable contributions to systematic zoology and botany. There is also an exhaustive study of the collection of human skulls from Patagonia, with numerous tables of measurements. The most generally interesting research is a new examination of the deposits on the coast of the province of Buenos Aires containing human remains or implements made by man. This has been instigated by the criticisms of Argentine discoveries published by Drs. Hrdlička, Holmes, and Willis in their work on "Early Man in South America" (Smithsonian Institution, 1912). It is maintained that in the neighbourhood of Mar del Plata and Miramar there is no reason to doubt the association of evidence of man with late Tertiary mammals, and a femur of a small Toxodont is described by Mr. Carlos Ameghino, showing a piece of worked quartzite which must have penetrated the bone during life.

THE Avezzano earthquake of January 13 last originated in a portion of Italy in which strong earthquakes are of infrequent occurrence. One of its latest predecessors, that of February 24, 1904, has been studied by Dr. A. Cavasino (*Boll. Soc. Sis. Ital.*, vol. xviii., 1914, pp. 411–48), and his conclusions are of interest in connection with the recent earthquake. The area of destruction contains only 54 square miles, and its centre lies about seven miles north-west of Avezzano. The two earthquakes were therefore in all probability associated with the same fault. As the disturbed area includes only about 4750 square miles, the focus cannot have been at a great depth. Using Dutton's method, Dr. Cavasino estimates that depth to be about 4½ miles.

A SUMMARY of the weather for the past summer is given in the issue of the Weekly Weather Report of the Meteorological Office. The period comprises the thirteen weeks from May 30 to August 28, and the aggregates of temperature, rainfall, and bright sunshine are given for the several districts of the United Kingdom. The mean temperature was below the average everywhere except in the north of Scotland, where the excess was less than 0·5°; the deficiency amounted to a degree in the south-east and south-west of England, and in the English Channel, whilst in other districts it was generally about 0·5°. The east of England was the only district with the absolute maximum temperature as high as 90°, and in all the western districts the thermometer failed to reach 80°. Rainy days were in fair agreement with the normal, whilst the total rainfall varied considerably in different parts of the United Kingdom. There was a deficiency of rain in the north and west of Scotland, the north of Ireland, the north-west and south-east of England, and in the English Channel; the greatest deficiency was in the west of Scotland, where the rainfall was only 72 per cent. of the average. There was an excess generally in the eastern district, in the south-west of England, and in the south of Ireland; the greatest excess was 123 per cent. of the average in the east of England. Bright sunshine differed very little from the normal, and the only districts with an excess were the north of Scotland and the north-west of England.

THE number of the Proceedings of the Tokyo Mathematico-Physical Society issued in June, 1915, contains a *résumé* in English by Mr. Tokurô Nakano of a magnetic survey of Japan for the epoch January 1, 1913, executed by the Japanese Hydrographic Office under the superintendence of Prof. Tanakadate. There were four survey parties in the field, and the whole of the observations were concluded within fourteen months, so that uncertainties arising from secular change were unusually small. A previous survey had been made for the epoch January 1, 1895, also under the supervision of Prof. Tanakadate, and the same instruments and a good many of the same stations were employed on the two occasions. A still earlier survey was executed in 1887 by Profs. C. G. Knott and Tanakadate. The 1913 survey, however, unlike the earlier ones, was not confined to Japan proper. Of its 331 stations, 78 were in Korea and 16 in Formosa; 38 of them were adjudged disturbed and left out of account in deducing the isogonals, isoclinals, and isodynamics. Formulæ were found for the values of the different magnetic elements, proceeding in powers of the latitude and longitude differences. Tables based thereon give the calculated values of the declination, dip, and horizontal force at the intersections of degrees of latitude and longitude. Similar formulæ were found for the secular change, and even for the rate of change, or "annual acceleration," of the secular change. The secular change conclusions were based on the results from fixed magnetic observatories and from stations common to two or more of the surveys.

THE Transactions of the Royal Society of South Africa, vol. iv., parts 1 and 3, 1915, contains three papers by Prof. J. C. Beattie dealing with terrestrial magnetism in South Africa. The first paper, read July 16, 1913, gives the values of declination, dip, and horizontal force observed by Prof. Beattie himself at about ninety stations in the years 1910 to 1913, and values of the declination observed by Mr. O. C. Macpherson at seven stations in 1909. Some of the ninety stations had been previously observed at by Profs. Beattie and Morrison during their survey of the epoch July 1, 1903. The new parts of the country dealt with included the West Transvaal, British Bechuanaland, and Bushmanland. The second paper, also read on July 16, 1913, gives a table of values of declination, dip, and horizontal force for the epoch July 1, 1908, at 255 South African stations. The observations had been made at various times from 1900 to 1913, the reductions to a common epoch depending on the secular change results obtained from repeat stations. There are three charts representing respectively the isogonals, the isoclinals, and the lines of equal horizontal force for the epoch considered. The third paper, read May 20, 1914, discusses the secular variation of the magnetic elements in South Africa between 1900 and 1913. There are three charts showing respectively the mean annual changes of declination, dip, and horizontal force. Westerly declination is falling throughout the whole of South Africa, the rate of fall being especially large—from 10′ to 13′ annually—along the east coast as far north as Mozambique. The southerly dip is increasing rapidly, but in this case the rate of change is largest—8′ per annum—in the neighbourhood of Cape Town. Horizontal force is diminishing rapidly, the annual fall in Cape Colony varying from 85γ to 100γ per annum. There are few parts of the world where so large secular changes have been observed, thus magnetic observations in South Africa are of exceptional value.

THE London Mathematical Society has issued, with the assistance of its official printer, Mr. T. T. Hodgson, a list of suggestions for notation and printing of mathematical formulæ, accompanied by a sample illustration showing the leads, spaces, and quadrats required in mathematical composition. Most of the suggestions might be summed up briefly in the general statement that every symbol or sign introduced at a different level to the rest involves extra spacing, although this objection does not apply to the use of the ordinary indices and suffixes, or to the use of two lines to represent fractions in a line consisting entirely of formulæ. The use of a bar over a square root is objectionable, but we would suggest that the proposal always to use Roman or Greek *i* for the root of -1 is scarcely necessary, as the bar can be omitted in this case without ambiguity. The use of fractions in the middle of a line of letterpress produces an unsightly result. While agreeing with the suggestion that the small numerical fractions which are usually cast as single pieces of type can often be used with advantage, it should be noticed that "thirds" are not easy to distinguish from "eighths," and the solidus notation may often be used to overcome this difficulty. The avoidance of letters with bars or dots placed above them, to which much importance is attached, is a change which may often present difficulty, and it is doubtful how far the proposal to substitute dashes in the fluxional notation will be found practical in view of the frequent use of dashes for other purposes. There is, however, no reason why the raised dots should not be placed after instead of over the letters, while inverted commas offer another new opening, hitherto neglected. We should like to see "exp." included in the list of suggestions. But if writers of papers are sometimes to blame, printers have an awkward way of beginning a formula at the end of one line of letterpress and continuing it in the next line, even when the author has not done so. And we think the printers might at least take on themselves the responsibility of removing the bars over square roots. When, however, a paper refers to the rigid dynamics of aeroplane motions, the number of symbols required is so great that violation of every rule becomes inevitable.

IN the second part of vol. iv. of the Science Reports of the University of Sendai, Prof. K. Honda describes a balance which allows the effect of temperature on any chemical change involving loss of material by evaporation or dissociation to be followed readily. The beam of the balance is a silica glass tube from one end of which a small platinum or magnesia vessel to contain the specimen is suspended, within an electrical heating coil enclosed in turn in a Dewar vacuum vessel. The other end of the beam is pulled down by a spiral spring, the pull of which can be adjusted to suit the specimen used. The movement of the beam is observed by means of a mirror attached to it and a telescope and scale, a deflection of a millimetre corresponding to about half a milligram. The temperature of the specimen is observed by means of a thermo junction, and is raised about a degree per minute. Curves showing the loss of water of crystallisation of two sulphates, the dissociation of a carbonate, and the change of chromic oxide with temperature are given.

"RED BOOK" No. 198 of the British Fire Prevention Committee contains the report of a fire test with three window openings filled with wired glass. These were subjected to the committee's standard 60-minute test at temperatures reaching up to 1600° F., followed by the application of water under pressure. The usual test size of glazed panels is about 2 ft. by 2 ft., but one of the panels under test in this case measured about 3 ft. by 2 ft. The classification of temporary protection (Class B) under the committee's standards has been accorded for this glazing to this larger size. Partial protection (Class A) has already been obtained for wired glazing by the same makers (Messrs. Pilkington Brothers, Ltd., St. Helens), both for regulation sizes and for a panel measuring about 4 ft. by 1 ft. In the present tests, in the case of two of the panels, neither fire nor water had passed through the glazing at the conclusion of the test, and the glazing remained in position after the application of water. In the third panel (two lights) fire had not passed through the glazing, but on the application of water the glazing in the lower light was perforated at the top portion, and some water came through. In this case also the glazing was in position after the application of water.

MR. JAMES HORSFALL, late chief draughtsman of the Canadian Pacific Railway, suggests an improvement in the design of locomotive coupling and connecting rods. Such rods are subject to reversal of stresses due to the alternate push and pull, and also in the bending due to the action of centrifugal force. The effects of the latter may be reduced considerably by prolonging the rods beyond the pins and attaching balance weights to the extensions so formed. By suitably adjusting the proportions, the bending moment at the middle of the rod may be made zero, and the maximum bending moment on the rod will be much less than in the same rod unbalanced. Mr. Horsfall says that, as the result of very numerous experiments with rods of various kinds, he is convinced that the best way to avoid danger from the breakage of coupling and connecting rods is to counterbalance them in the manner suggested.

OUR ASTRONOMICAL COLUMN.

COMET 1915*d* (MELLISH).—The discovery of a second comet during the present year by Mr. J. E. Mellish, Madison, Wis., U.S.A., was announced last Thursday in a telegram from Copenhagen. On September 6, at 22h. 9·1m., the comet's position was α 5h. 30·2m., δ 8° 50′ (approx. 8° south of γ Geminorum). No information was supplied regarding the direction or rate of the comet's motion, or of its magnitude.

SATURN.—Dr. Percival Lowell, in a letter to M. Flammarion (*L'Astronomie,* August, 1915), describes observations made at Flagstaff during last spring. Photographs were secured on March 12, when the ring system was practically at maximum apparent breadth. Cassini's division appeared continuous. With the planet thus framed in its rings a new determination of the aplatissement has been possible, giving the value 1/9·18

RADIAL VELOCITY, MAGNITUDE, AND SPECTRAL TYPE. —Mr. C. D. Perrine has published (*Astrophysical Journal,* vol. xli., pp. 396–99) the results of further analysis of the data in Campbell's lists of radial velocities. Dividing the stars into two groups according to magnitude, drawing the line at 3·0m., he finds a decided increase of the mean radial velocity for the fainter group; this also holds for the stars of each